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Feature Article

Simulation Combines Soldiers In Virtual Training for Battle

by Jessica Drake

The Army is the Defense Department's leading user of simulation.Ithasmore money budgeted for research and development of technology than the other services.

The Army manages the joint simulation system (JSIMS) and is funding development of the combined arms trainer which will integrate a variety of weapons systems into force-on-force simulated battles, says Training 2000, a biennial simulation and modeling market analysis by the National Training Systems Association, Arlington, Virginia.

The Army wants simulators to train individual warriors and units as a single fighting force. Army commanders say reductions in force structure and training resources, such as adequate ranges and training devices, hinder their efforts to meet that goal.

"The Army anticipates increasing constraints on the ability to maneuver and shoot during training as a result of environmental concerns, civilian encroachment on training areas, increased ranges of weapon systems, rising cost to train, and a declining budget," explains Training 2000.

The Army wants an inexpensive, accurate way to train soldiers for their missions, especially military operations other than war, says the report.

Millions of dollars are budgeted for training systems in the Army during the next five years with more than $238 million projected for major programs in the current fiscal year.

Force-on-Force Training

Leaders, the survey says, want to focus in collective, force-on-force training, while providing specialized device training focus for specific equipment.

Yet soldiers need access to the training systems.

The devices currently available are not always close to the soldiers who need them, Training 2000 points out. "Emphasis will be on more affordable

training, simulations, simulators and devices that are portable, efficient, and allow for training at the regional and national training center or a near-home station."

The Army National Guard, last year, faced an average separation of 154 miles between soldiers and major training areas, the report reveals. Simulators are often 150 miles away or more.

To address the issue, the National Guard has increased its modernization budget for equipment by 124 percent by reducing money available for technicians and training schools.

The Army's goal is to exploit "modeling and simulation technology as a significant acquisition and training tool," the survey says.

Last year the Army fielded more than 100 distance learning classrooms, says the report. Available instruction includes air traffic controller and combat lifesaver courses. Army leaders plan to place distance learning classrooms within 60 miles of each National Guard unit.

The Army views simulation as a force multiplier that provides combat and cost savings, says the report. "With a decreasing budget and the infusion of new equipment, high-cost live training will be replaced more and more by simulation and simulator-based training."

The main funded projects include the combined arms tactical trainer, distributed interactive simulation, and support research and development.

"In the future training devices will be required as part of the weapon system design process to ensure availability and validity," the survey says.

The combined arms tactical trainer integrates close combat, aviation, air defense, engineer, combat service support, and artillery forces.

The Army budget commits $90.3 million to the combined arms tactical trainer during a five-year period ending in Fiscal Year 2003.

One of the primary components of the trainer will be the common terrain database that can interface with other systems. This is one area that requires industry assistance, the report says.

Another need is a combat mission rehearsal system that is deployable with soldiers down to the tactical-unit level.
These trainers should offset reductions in ammunition and increases in the deployment rate, Army leaders tell interviewers for the survey.

Though live fire will still be required for initial qualification with weapons, "the trend is toward the use of devices, where possible, to sustain skills," the survey says. The single exception is mortars, which lack a beneficial simulator.

simulator.

Night Fighting
Company and field grade officers are now training in the night fighting lab at Fort Benning, Georgia. There they learn to use night vision equipment in simulated conditions of a desert, jungle, forest, or city.

For Army aviation, collective training is the most notable deficiency, Training 2000 relays. An aviation component to the combined arms tactical trainer is being developed for pilots and air traffic controllers.
Officials say they want to include reconfigurable cockpits, helmet-mounted visual systems, automated forces, and software modeling.

Funded activity for the trainer this year includes engineering changes based on user experience and operational testing, says the report.

The system includes requirements for embedded technologies and a common terrain database. Plus, Army leaders want it to be deployable.

The Army is heading up efforts in the area of distributed interactive simulation, a synthetic environment in which humans interact through connection of several simulations to each other.

Synthetic environments help in prototyping weapons and in the development of doctrine and tactics. They will use standard communication architectures.

With a budgetary commitment of $114 million through 2003, distributed interactive simulation is the focal point of efforts to develop terrain and mobility models for the simulation community, says Training 2000.

The program, managed by the Training and Doctrine Command at Fort Monroe, Virginia, is key to developing reconfigurable simulators for aviation, command and control, and dismounted infantry. Technical management is through the Simulation,Training,and Instrumentation Command (STRICOM) in Orlando, Florida.

Funded activity for Fiscal Year 1999 includes developing computer generated forces, demonstrating mission specific applications, and enhancing the synthetic environment to support larger units.

Warfighters Simulation 2000
The line item for non-system training totals $416 million through 2003. Funded plans include engineering and development of Warfighters Simulation 2000 (WARSIM) and continued introduction of simulators to support the combat training centers.

(WARSIM) is the next generation battle simulation, says the report. It will be the land component of the joint simulation system.

Army plans call for it to replace simulation in use for corps and brigade-level

training. Army officials also plan to use it to link various simulations.

Research into modeling and simulation technology funding totals $160 million for the five-year period ending in 2003. A prime goal for developmental simulation is to enable combat, materiel, and training developers to try out tactics, doctrine, and weapon design inside a virtual test tube before fielding them with soldiers.

The virtual combined arms battlefield brings the warfighter into the loop in evaluating weapons and doctrine.

This project is supported by facilities at Fort Knox, Kentucky; Fort Rucker, Alabama; and Fort Benning. The operational facility is in Orlando.

The goal, explains the survey, is to shorten cycle time by fielding new concepts of tactics and gear within one-year of the initial idea.

Enhanced computer generated forces on the virtual battlefield are receiving considerable attention. The Army set aside $2 million this year for the development of software systems that add realistic units and forces in simulation.

Plans include $17 million for the project through Fiscal Year 2003, the report says. The work is a spin off from the interactive simulation program and is not a new start.